



FEDERAL TRANSIT ADMINISTRATION

TPM/Office of Engineering

# Risk Management Process FY 2007 Overview



# Introduction

## ❑ Risk vs. Uncertainty

- Not all uncertainties imply risk, but all risk requires underlying uncertainties.
- The demarcation line between risk and uncertainty requires exposure to “material” consequences, positive or negative.
- Risk Management offers an “artificial horizon” to plan and execute projects with sufficient lead time to avoid cost impacts.

# Introduction

## ❑ Risk Management

- Must be developed to a set of project management processes...

- ❖ Risk Mitigation process that defines how risk is mitigated
- ❖ Project Definition process that is integrated with the FTA Phase Model and the Risk Management process....

# Introduction

## □ How is Risk Mitigated?

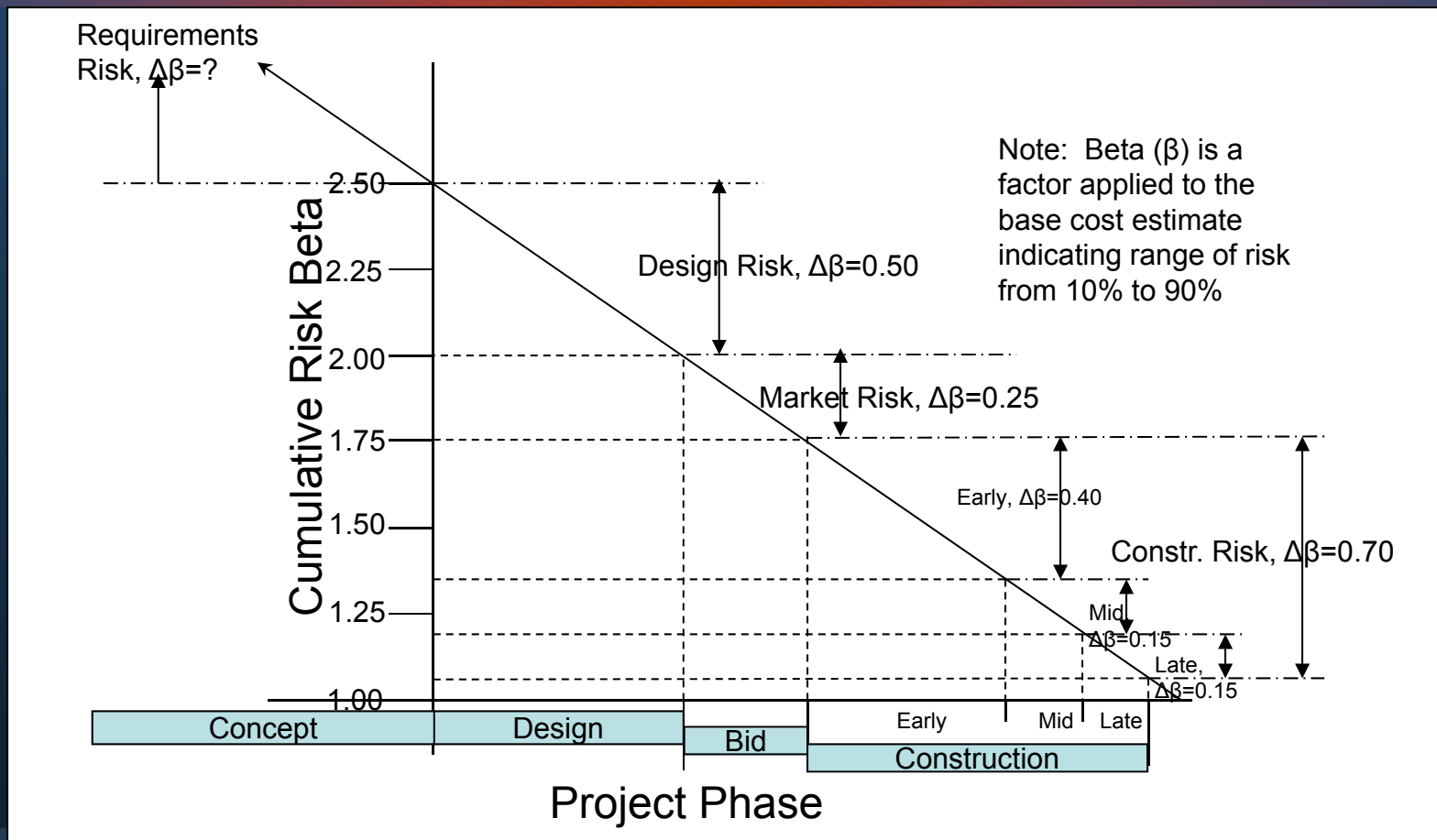
- It depends on what phase the project is in: the earlier in the process, the more unknowns and the higher the risk
- Four stages of project completion are considered important, completion of each phase successively reduces risk

<u>Stage of project completion</u>	<u>Risk</u>	<u>Example</u>
Requirements definition>>	Requirements risk	Unknown number of stations
Project design>>	Design risk	Vertical alignment issues
Construction contracts procurement>>	Market risk	Significant spike in cost of steel
Project construction>>	Construction risk	Claims, change orders

# Risk Mitigation Schema

<b><math>\beta</math> Value or Range *</b>	<b>Description</b>
<b>Above 2.5</b>	<b>Implies increasing uncertainty associated with project requirements.</b>
<b>2.5</b>	<b>All requirement risks have been mitigated.</b>
<b>2.0</b>	<b>All design risks have been mitigated</b>
<b>1.75</b>	<b>All market risks inclusive of bidding risk have been mitigated through availability of a firm price/quote.</b>
<b>1.35</b>	<b>All early construction risks composed of geotechnical/utility/major claims, usually associated with 20% complete, have been mitigated</b>
<b>1.20</b>	<b>All mid-construction risks inclusive of major claims, delays, impacts, etc., usually associated with 75% complete, have been mitigated.</b>
<b>1.05</b>	<b>All start-up / substantial completion of construction risks, usually associated with 90% complete, have been mitigated.</b>
<b>1.0</b>	<b>Implies there are no risk or uncertainty of any kind associated with this item and represents the perfectly mitigated state of the project scope item, or the expected value of perfect mitigation.</b>

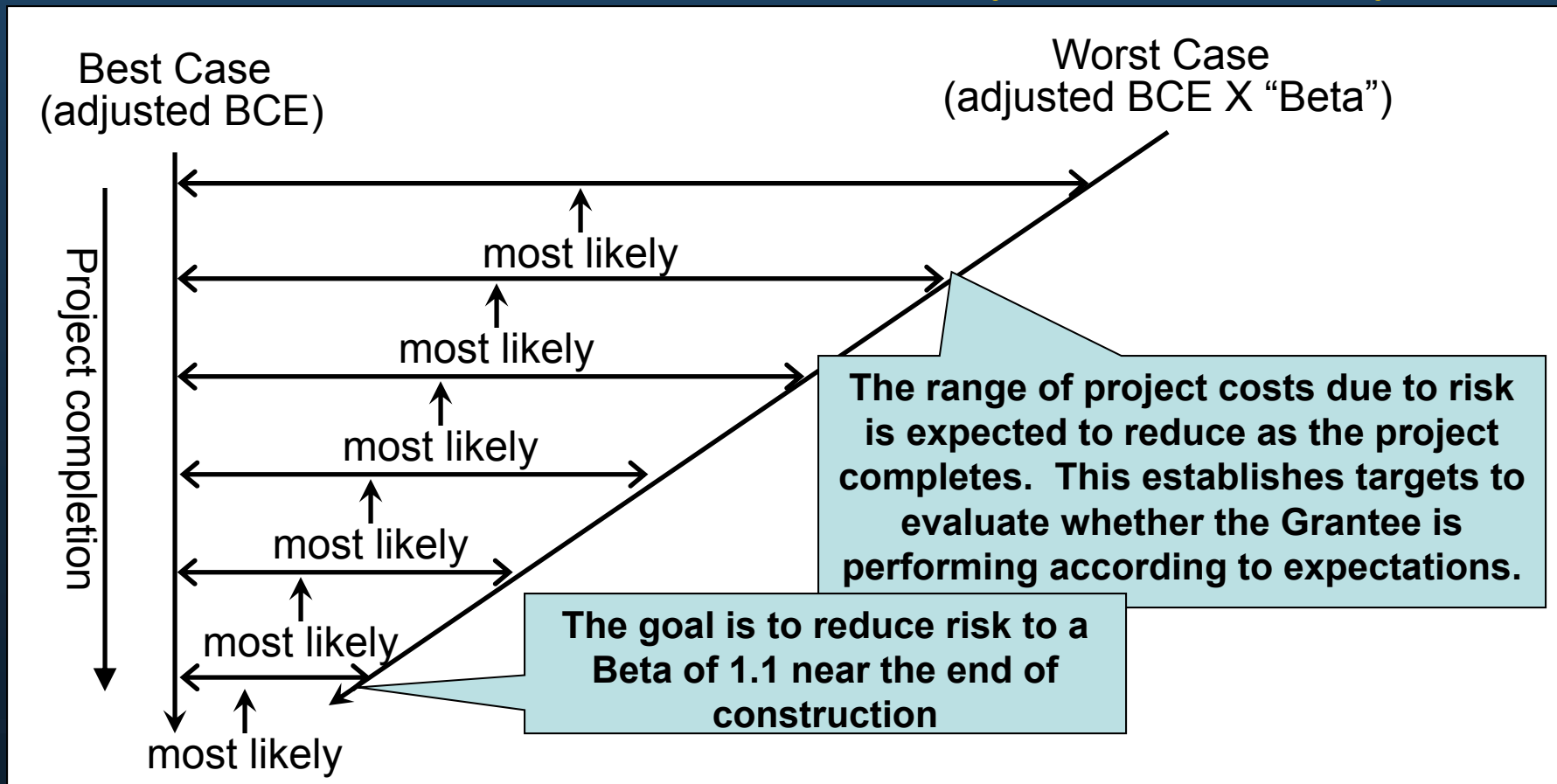
# Risk Mitigation by Phase



Concept

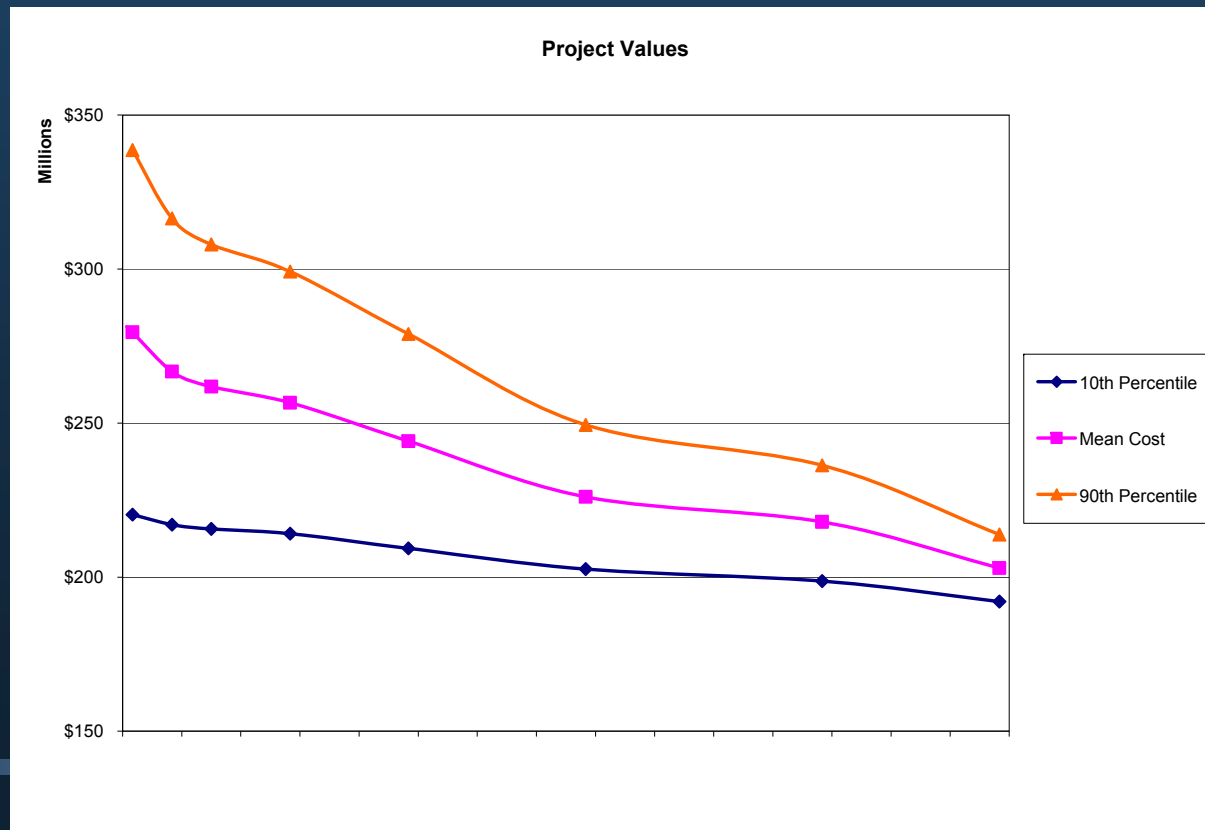
# Risk Mitigation by Phase

- Step 6: Repeat this process for several major phases of the project



# Risk Mitigation by Phase

- Step 7: Create a graph that indicates the expected reduction of risk across the project life-cycle

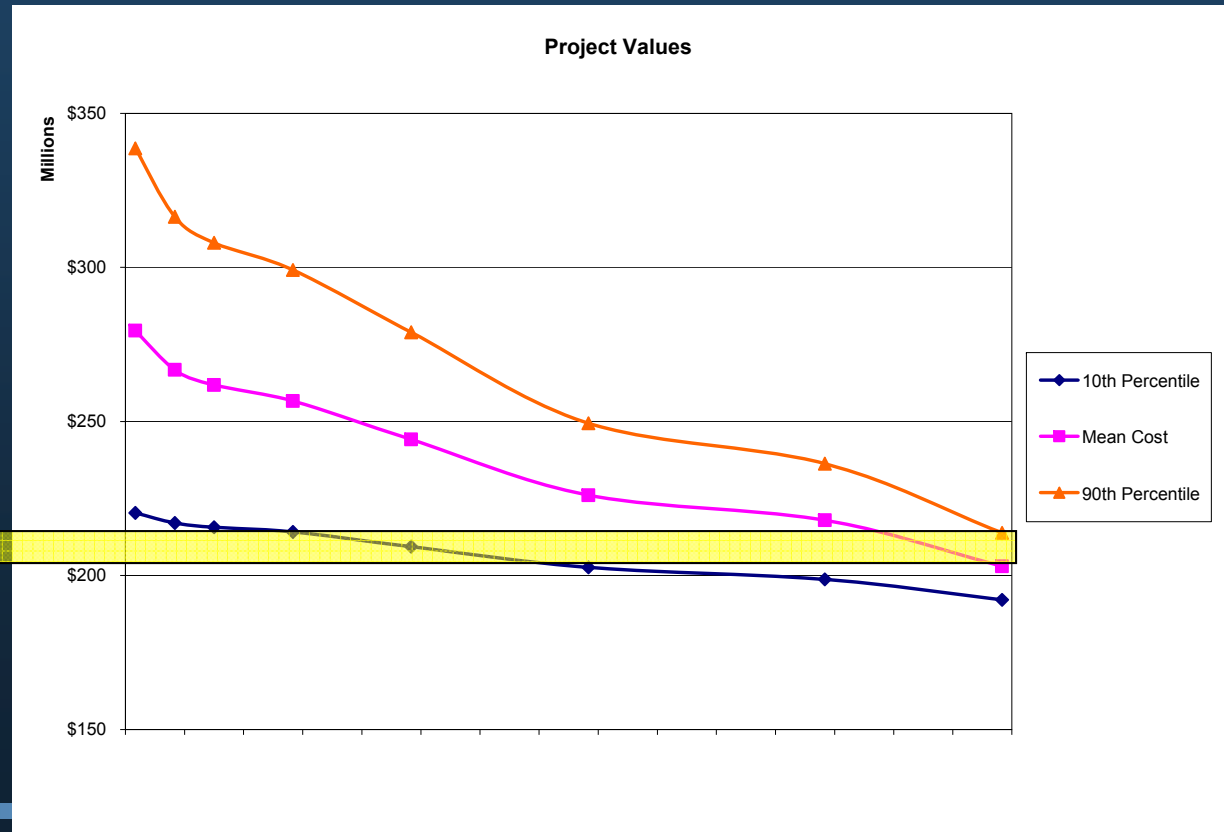




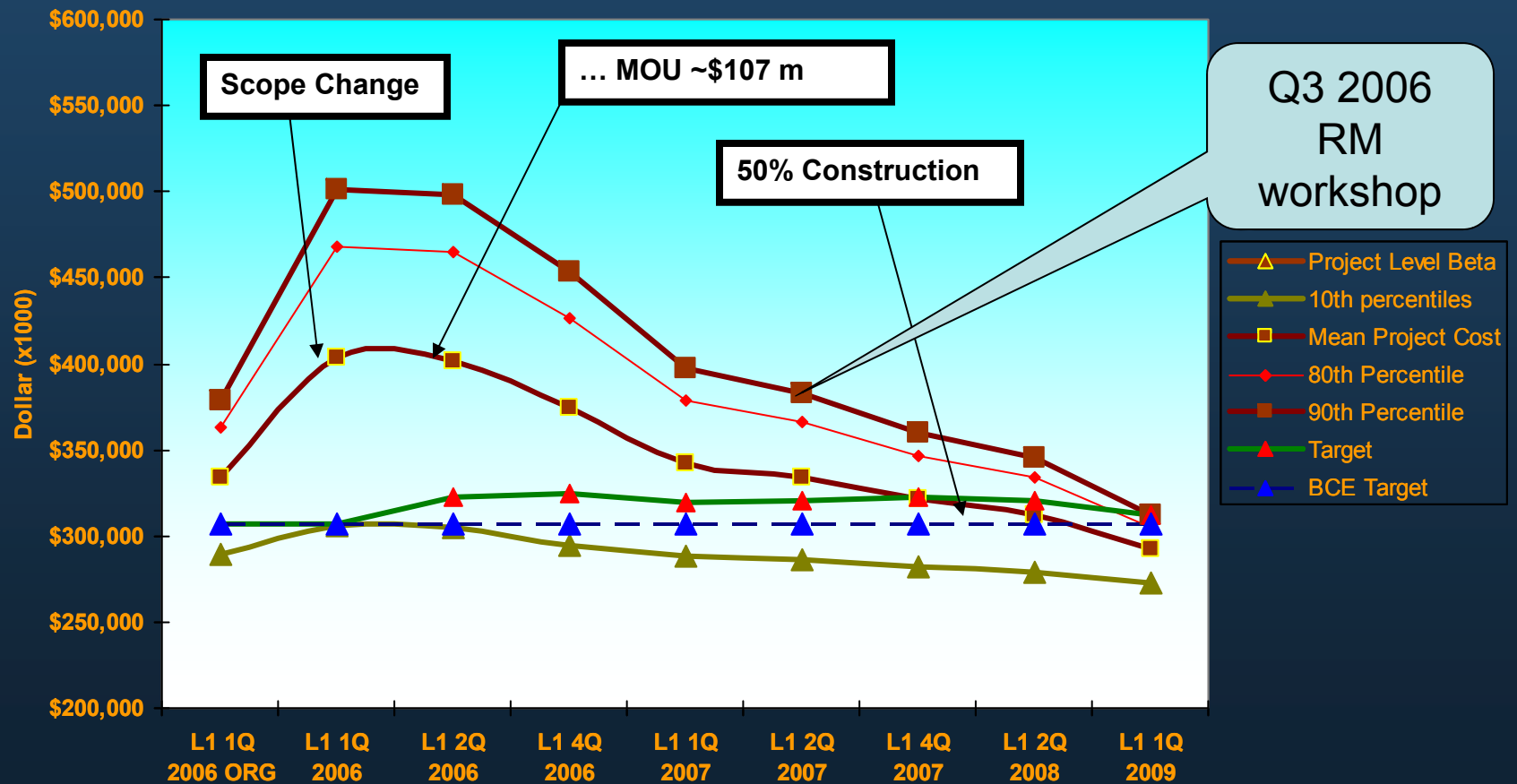
# Risk Mitigation by Phase

- Step 8: Use this information to evaluate the reliability of the BCE

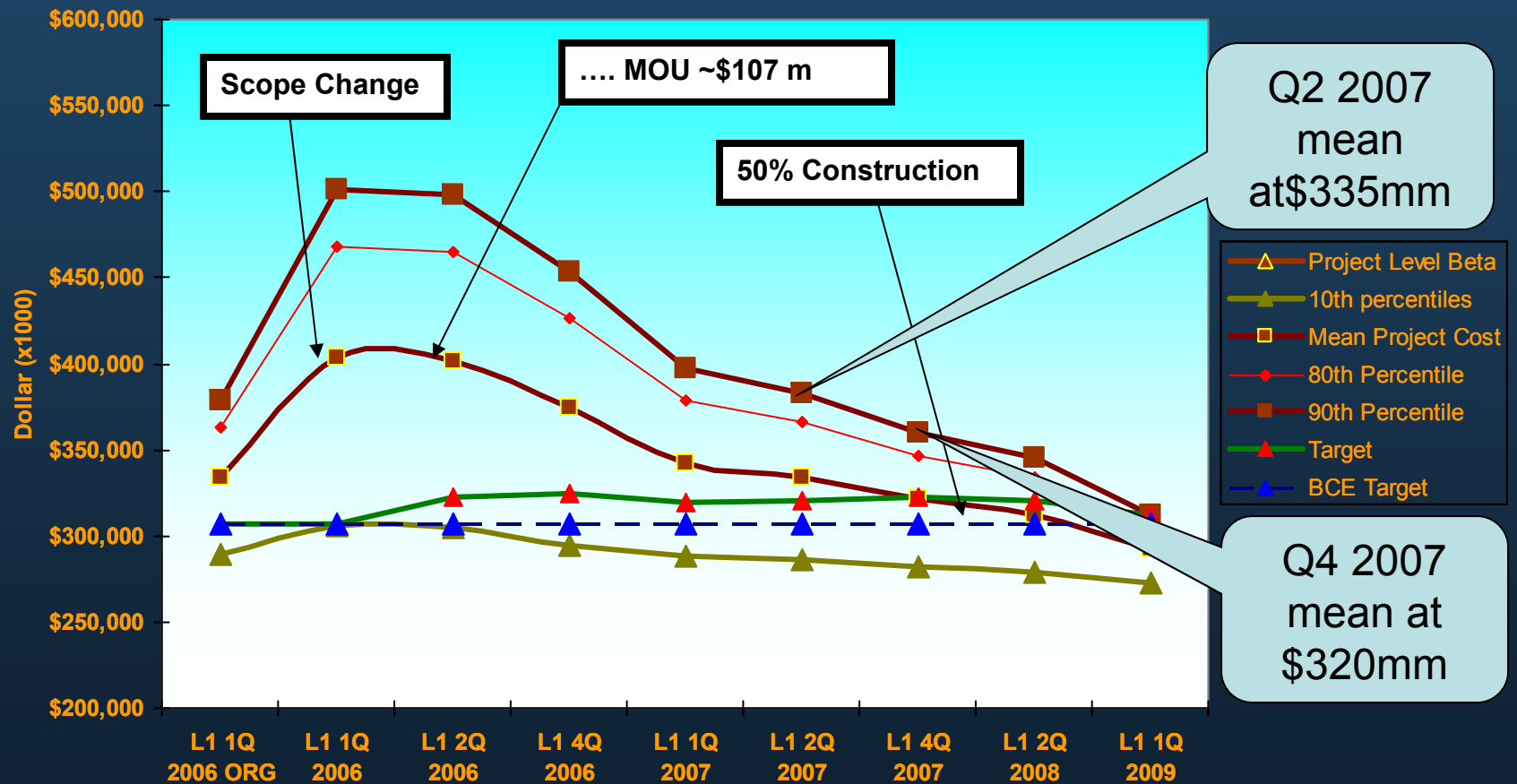
Look to establish an FFGA budget amount that has a high likelihood of achievement with well-reduced risk, **if** the project team manages the project well.



# Project Risk versus Time



# Project Risk versus Time

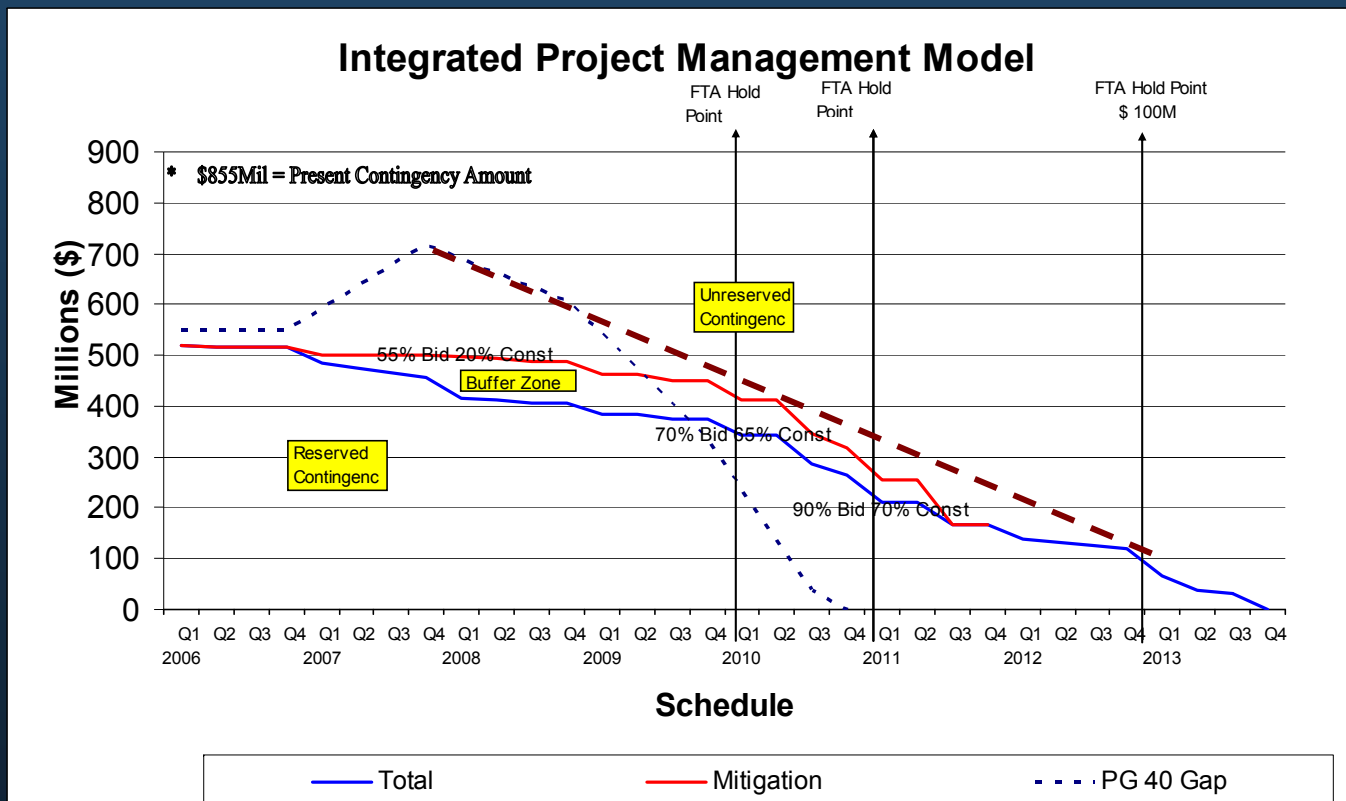


# Introduction

## ☐ Risk Management

- RM products must deliver management baselines that are robust and possess “shelf life”...

# ESA Mitigation Workshop Contingency Drawdown Curve





## Risk Management Metrics and Performance

- ❑ Of the 11 projects that used the first generation risk management approach:
  - Only 3 out of the 11 still are performing within the parameters of their original forecasts
- ❑ Of the 12 plus projects that used the second generation risk management approach:
  - 12 out of 12 are operating within the parameters of their original forecasts, although several of them are experiencing budget issues.

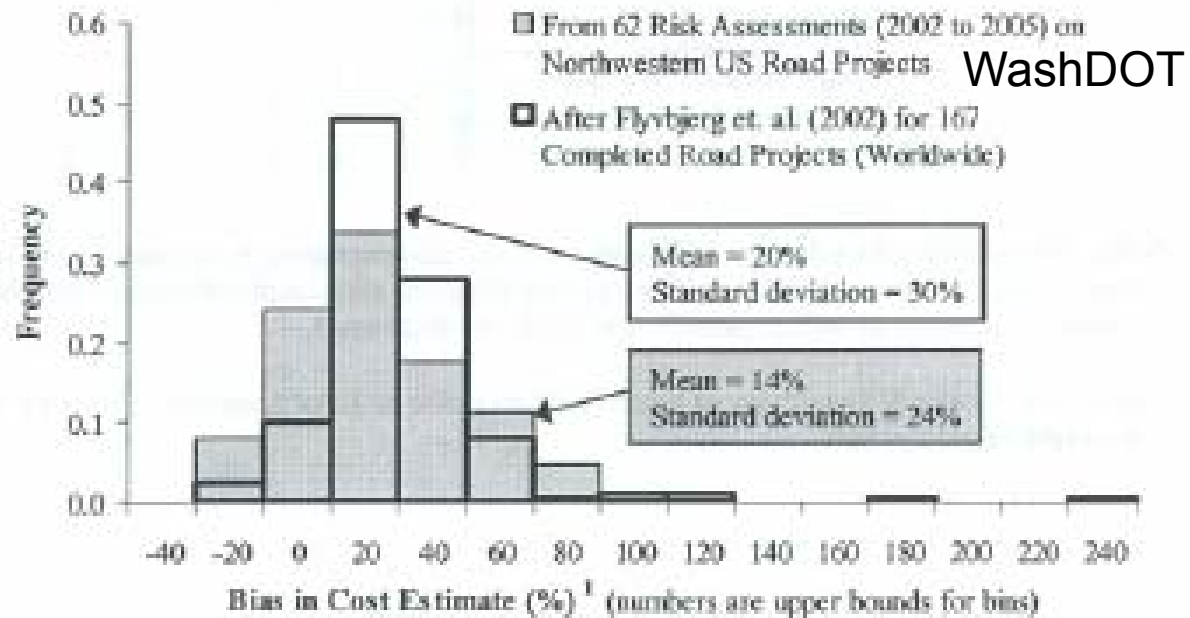
# Introduction

## ❑ Risk Management

- Fundamentally... Risk Management (RM) is about performance...
- And Performance that exceeds that of either the unmanaged approaches, or previous experience...



# Risk Management Metrics and Performance



Note 1. Bias calculated for each set of information as described in the text.

Figure 18. Comparison of Results from Risk Assessments to Published Results for Completed Projects.

# Risk Management Metrics and Performance

